

U. S. Appln. No. 09/992,416

Amendment dated May 7, 2004

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REMARKS

This paper is a timely response to the Final Office Action mailed February 12, 2004.

Telephone Interview

A telephone interview was conducted between the Applicants' representative, Ross A. Schmitt, and the Examiner on May 7, 2004, based on a draft Amendment sent to the Examiner. The Applicants thank the Examiner for conducting the telephone interview. The Applicants submit that the following is written statement of the reasons presented at the interview as warranting favorable action, as required by 37 CFR 1.133(b). Also enclosed is a copy of an Applicant Initiated Interview Request Form signed by the Applicants' representative.

The Applicants' representative highlighted two particular reasons for allowance of the claims: (1) the combination of references do not teach "at least one of the isolated islands is completely surrounded by the first doped region" as claimed in Claim 1, and (2) the combination of references do not teach "wherein the first doped region and the second doped region are heavily doped" as claimed in Claim 1, as amended. The Applicants representative further noted that the feature of "wherein the first doped region and the second doped region are heavily doped" was previously presented in Claim 19, so the proposed amendment to Claim 1 incorporates the features previously presented in Claim 19.

The Examiner did not agree that Claims 1 and 12 with the proposed amendments were patentable over the cited art. The Examiner did state that he would fully consider the amendments upon submission of the formal response. The Applicants representative noted that, since Claim 1 had been amended to incorporate the limitations of Claim 19 and Claim 12 had been amended to incorporate the limitations of Claim 20, the proposed amendments should be entered in the application and considered. Further, if these claims are rejected on new art, any subsequent Office Action should be a non-final Office Action.

The remainder of this paper comprises the arguments previously set forth in the draft response sent to the Examiner prior to the telephone interview and which was the basis of the

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telephone interview. The Applicants request that the Examiner fully consider the arguments set forth below.

Amendments

Claims 19 and 20 have been cancelled from the application. Claim 1 has been amended to incorporate the features recited in claim 19 to more clearly identify a novel and non-obvious aspect of the present invention. Claim 12 has been amended to incorporate the features recited in claim 20 to more clearly identify a novel and non-obvious aspect of the present invention.

The Applicants submit that these amendments add no new matter to the application. The Applicants further submit that these amendments may be properly entered under 37 C.F.R. 1.116, since the amendments comprise the cancellation of Claims 19 and 20 and the incorporation of the subject matter of those claims into the claims from which they previously depended.

Claim Rejection - 35 U.S.C. 103(a)

In section 2 of the Final Office Action, the Examiner rejects Claims 1-3, 7-12 and 14-20 under U.S.C 103(a) as being unpatentable over AAPA in view of US Patent 5,623,387 to Li et al. The Applicant respectfully traverses this rejection for the following reasons.

The Examiner is reminded that to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teaching. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2142. The Applicant submits that the Examiner has failed to satisfy these criteria in asserting that the rejected Claims are obvious in view of AAPA combined with Li et al.

In Section 2 of the Final Office Action, the Examiner asserts that Li et al teach isolated islands (1011) distributed in the doped region 305 having the second conductivity type. Therefore, the Examiner concludes that it would have been obvious to incorporate the teaching

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of Li et al. into the device taught by AAPA because it prevents current hogging and results in high ESD voltage tolerance.

The Examiner asserts that Li et al. teach, at col. 17, ll. 6-12, a plurality of isolated islands (1011), wherein at least one of the isolated islands is completely surrounded by the first doped region. However, the Applicants submit that Li et al. actually teach, at col. 17, ll. 6 - 13, that the field oxide walls 1011 separate segments of the bi-polar transistor, in combination with lightly doped regions 1012b to avoid lateral current flow, thereby preventing current hogging. The Applicants further submit that Li et al. teach that "the combination of field oxide region 1011 and lightly doped area 1012b provides junctions between N⁺ and N⁻ regions at flat field oxide boundaries and result in very high ESD voltage tolerance."

The claims 1 and 12 have been amended to recite the features of "the first doped region and the second doped region are heavily doped regions". By way of example, but not of limitation, the Applicants direct the Examiner to the drawings and specification of the present application. FIGS. 2A and 2B show that the plurality of isolated islands 32 are completely surrounded by the first (heavily) doped region 28. Further, as shown in the drawings and specification of the present invention, **the first doped region 28 is a heavily doped region with only one defined doping concentration (N⁺) rather than a combination of a heavily doped region (N⁺⁺) and a lightly doped region.** However, the Applicants submit that Li et al. only teach the combination of field oxide walls 1011 and lightly doped regions 1012b to avoid lateral current flow. As shown in Fig. 10C of Li et al., the field oxide walls are bounded by the heavily doped region (N⁺⁺ region 1013a) at the upper, left and right boundaries, and bounded by the lightly doped region (1012b) at the lower boundary. Thus, the field oxide walls 1011 of Li et al. are surrounded by two different doped regions. Therefore, the Applicants submit that Li et al. does not teach "wherein at least one of the isolated islands is completely surrounded by the first doped region" as claimed in Claims 1 and 12.

Moreover, as recited on lines 6-10 in column 17, the light doped region 1012b plays a critical role in "avoid lateral current flow, thereby preventing current hogging." Further, **this object of "avoid lateral current flow" cannot be obtained if light doped region 1012b were**

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replaced by heavily doped region. Since the light doped region 1012b is a critical element as recited in Li, it is clear that there is no motivation to surround the field oxide walls 1011 completely by a first (heavily) doped region as apparently asserted by the Examiner. Accordingly, the Applicants submit that there is no teaching or suggestion in the prior art to combine Li et al. and the AAPA in the manner done by the Examiner. The only such motivation seems to have been obtained from the Applicants' own disclosure. The Applicants submit that this is improper hindsight analysis and may not be used to support the rejection of the claims.

Furthermore, as recited in the amended claim 1 and similarly recited in amended claim 12, "at least one of the isolated islands is completely surrounded by the first doped region" and the first doped region is "formed between the well region and the gate structure." By way of example, but not of limitation, the Examiner is directed to FIG. 2A, which shows a plurality of isolated islands 32 which are formed between the well region 18 and the gate structure 22 and immediately adjacent to the first side 26 of the gate structure 22 so that the resistance of the first doped region is increased. The Applicants submit that the Examiner has not shown a disclosure or suggestion in Li et al. that the isolated islands are distributed in a heavily doped region formed between the well region and the gate structure and immediately adjacent to the first side of the gate structure. Hence, the Applicants submit that there would be no motivation to combine Li et al. with the AAPA in the manner done by the Examiner.

Hence, the Applicants submit that the rejection of Claims 1 and 12, as amended, under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Li et al. is improper. The Applicants respectfully request that the rejection of these claims on this ground be withdrawn. Therefore, it is the Applicant's belief that these claims 1 and 12 are allowable over the cited references. Insofar as claims 2-3, and 7-11 depend from claim 1 and claims 14-18 depend from claim 12, it is the Applicant's belief that the claims 2-3, 7-11 and 14-18 are also allowable.

The Applicants respectfully request the entry of the amendments proposed above. Further, in view of the above, reconsideration of the rejection of Claims 1-3, 7-12 and 14-20 and allowance of all claims of the application are respectfully solicited. Should the Examiner feel that further discussion of the application and the Amendment is conducive to prosecution and

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allowance thereof, the Examiner is encouraged to contact the undersigned at the address and telephone number listed below.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

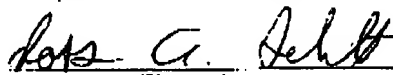
I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office at facsimile number 703-872-9306 and addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

May 7, 2004

(Date of Transmission)

Ross A. Schmitt

(Name of Person Transmitting)



(Signature)

5-7-2004

(Date)

Respectfully submitted,



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Encl.: Applicant Initiated Interview Request Form (1 page)